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Analysis of Non-Motorized Travel Conditions on the Jogoo Road Corridor in Nairobi

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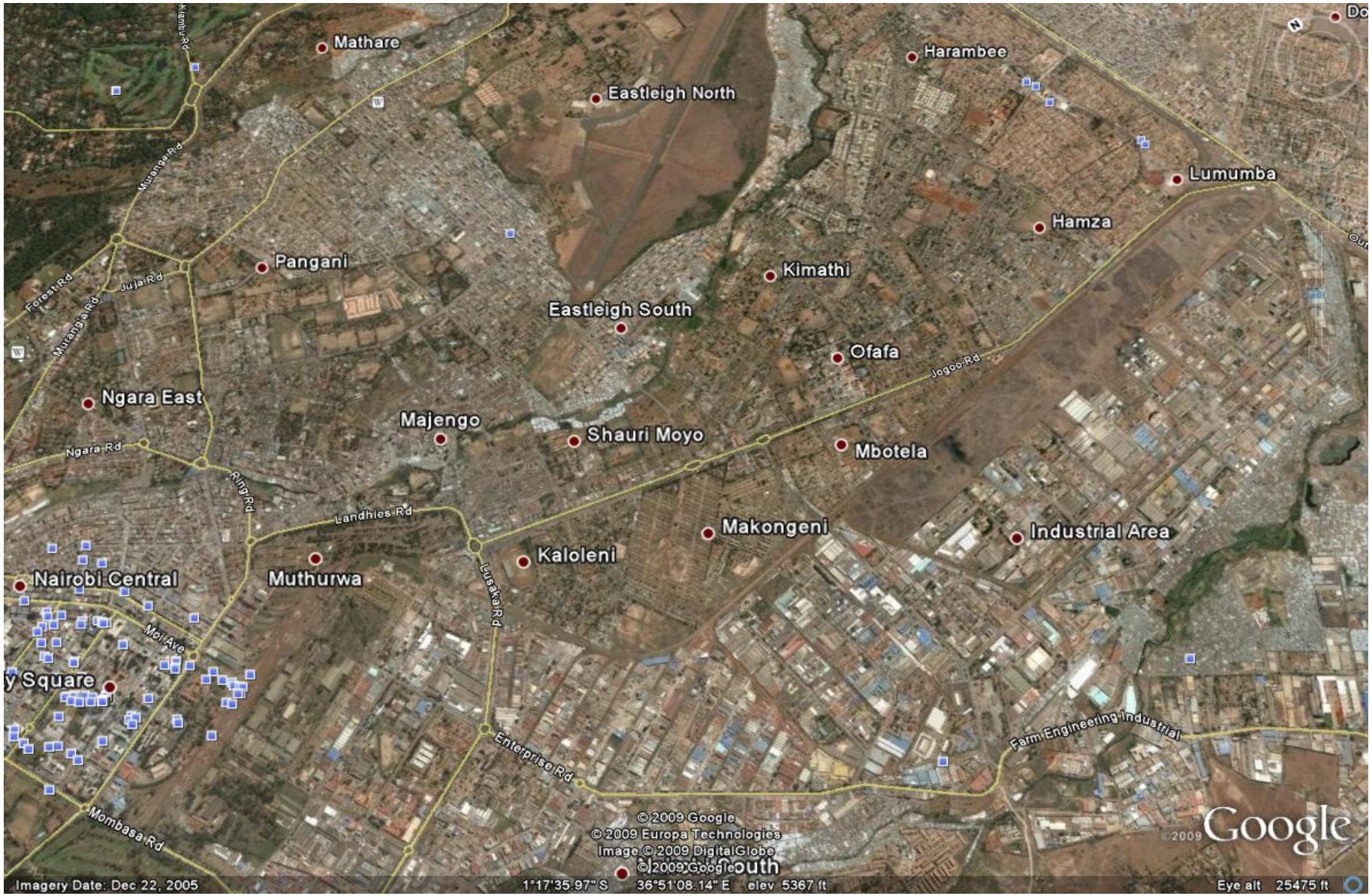
Presentation Outline

- Background
- Study area
- Methodology
- Findings
- Conclusion
- Recommendation

Background

- Part of larger study on NMT in Nairobi
- A scoping study on NMT travel conditions on Jogoo road corridor
- Testing the applicability of intended methodologies and variables
- Part of several projects under African Centre of Excellence for Studies in Public and Non-motorised Transport (ACET)

Study Area


Mathare
Eastleigh North
Harambee
Lumumba
Hamza
Pangani
Kimathi
Eastleigh South
Ofafa
Ngara East
Majengo
Shauri Moyo
Mbotela
Makongeni
Industrial Area
Kaloleni
Muthurwa
Nairobi Central
Kiambu Rd
Muranga Rd
Forest Rd
Juja Rd
Ngara Rd
Ring Rd
Landhies Rd
Jogoo Rd
Lusaka Rd
Moi Ave
Enterprise Rd
Mombasa Rd
Farm Engineering Industrial
© 2009 Google
© 2009 Europa Technologies
Image © 2009 DigitalGlobe
©2009 Google
Google
Imagery Date: Dec 22, 2005
1°17'35.97" S 36°51'08.14" E elev 5367 ft
Eye alt 25475 ft

The Survey Stations on Jogoo Road

Pictorial view of NMT operating conditions on Jogoo road

Methodology

- Pedestrian crossing observations
  - *Choice of survey points*
  - *Sample size*
- Pedestrian volume counts
  - *Determination of flow densities and LoS*
- Attitudinal surveys
  - *Bicyclist corridor experience – safety, security, adequacy of infrastructure, problems encountered, etc*

Mean roadway crossing time

Pedestrian Crossing		N	Min (sec)	Max (sec)	Mean	Stdev
	Time to cross first c/way	210	1	8	4.9	1.215
Muthurwa	Waiting at the median	210	1	15	3.9	1.566
	Time to cross second c/way	210	1	15	4.4	2.152
	Time to cross first c/way	200	1	10	5.1	1.681
Mbotela Stage	Waiting at the median	200	1	38	15.3	9.946
	Time to cross second c/way	200	1	11	5.6	1.669
	Time to cross first c/way	200	1	19	4.6	2.289
Makadara Footbridge	Waiting at the median	200	1	39	13.7	8.730
	Time to cross second c/way	200	2	19	5.1	2.334
	Time to cross first c/way	210	1	20	6.1	2.621
Hamza Stage	Waiting at the median	210	2	99	16.2	13.038
	Time to cross second c/way	210	3	66	8.4	6.713

Pedestrian crossing trajectory

Pedestrian crossing	Trajectory	Percent (%)
Muthurwa	At right angle	66
	Crosses diagonally	34
Mbotela Stage	At right angle	47
	Crosses diagonally	53
Makadara Footbridge	At right angle	61
	Crosses diagonally	39
Hamza	At right angle	48
	Crosses diagonally	52

Age/sex and ped. crossing behaviour

- At least 65% of old/disabled, 25% adults, and 40% of children were observed to be stressed
- 46% of children,26% of adult, and 8% old/disabled run across the roadway
- Adults were observed to be more relaxed while crossing the roadway
- No gender related road crossing behaviour observed

Pedestrian Level of Service (LoS)

- A quality measure describing operating conditions
- Expresses some ‘degree of freedom of choice’ accorded to a road user by a facility
- Six LoS levels are normally defined: A to F, with A representing the best operating conditions as perceived by users based on prevailing service environment
- Analyses of LoS was based on pedestrian flow density (pedestrian/min/m) and volume/capacity ratio

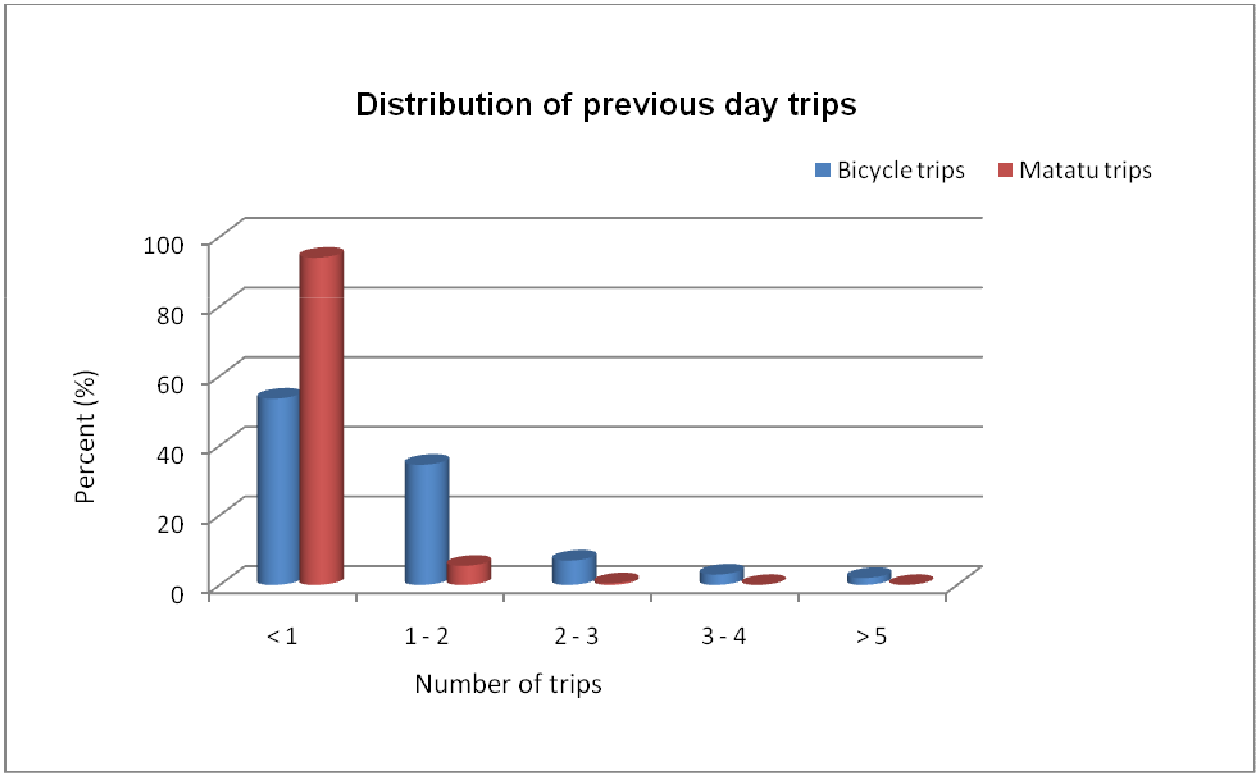
Level of Service

- Average flow rates can be misleading because of the minute-by-minute variations in pedestrian flows caused by random arrivals
- Pedestrians move in platoons and LoS is normally one level poorer than that determined by average flow rate criteria
- Volume to capacity (v/c) ratios were computed assuming 75 pedestrians/min/m for capacity

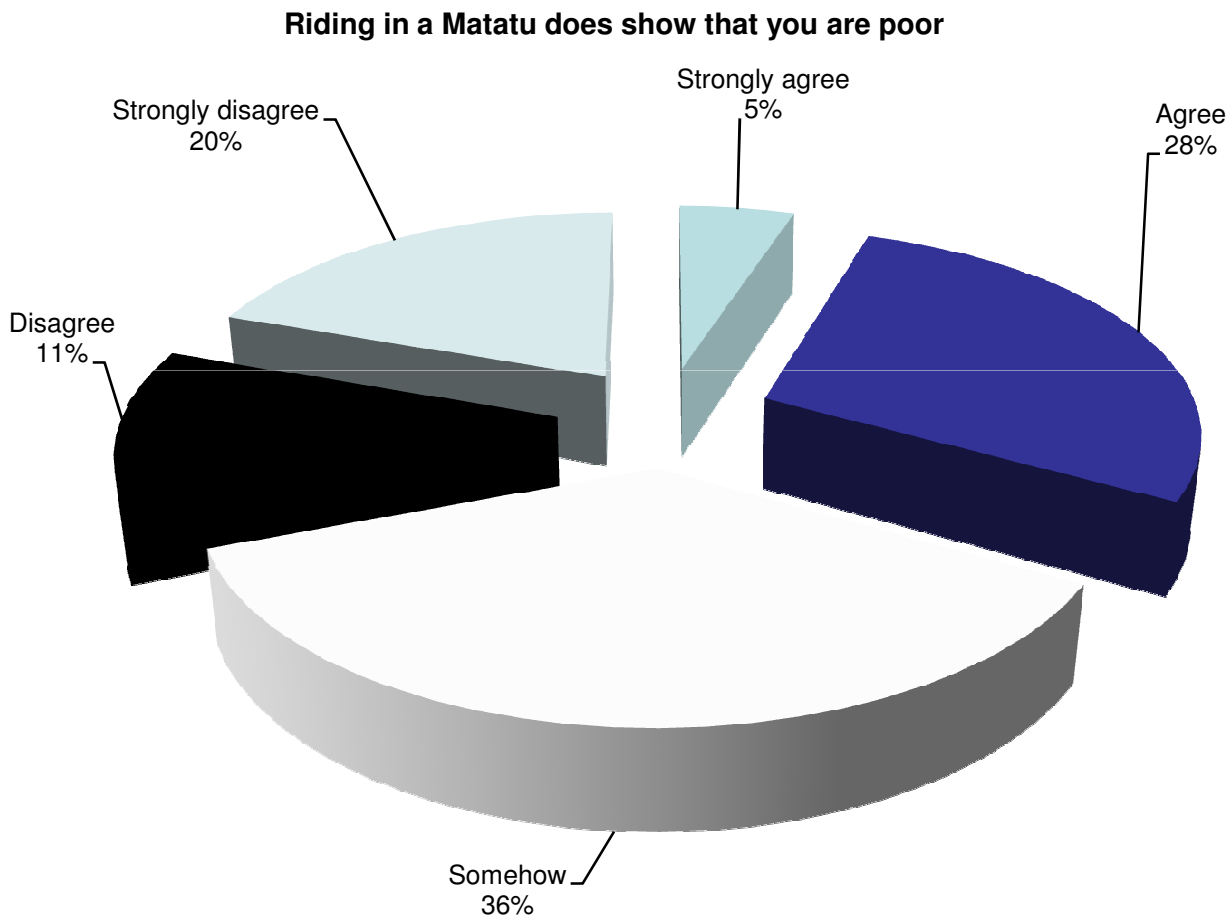
LoS for Segment links on Jogoo Road

Section	Pedestrian flow rate		V/c Ratio		Level of Service	
	Inbound	Outbound	Inbound	Outbound	Inbound	Outbound
Donholm – Tom Mboya Hall	8	9	0.34	0.37	C	C
Tom Mboya - Hamza	6	6	0.26	0.26	B	B
Hamza - Makadara	8	10	0.36	0.44	C	C
Makadara - Mbotela	10	14	0.42	0.60	C	D
Mbotela – Church Army	6	10	0.28	0.41	B	C
Church Army - Rikana	6	12	0.27	0.51	B	D
Rikana - Muthurwa	9	13	0.38	0.55	C	D

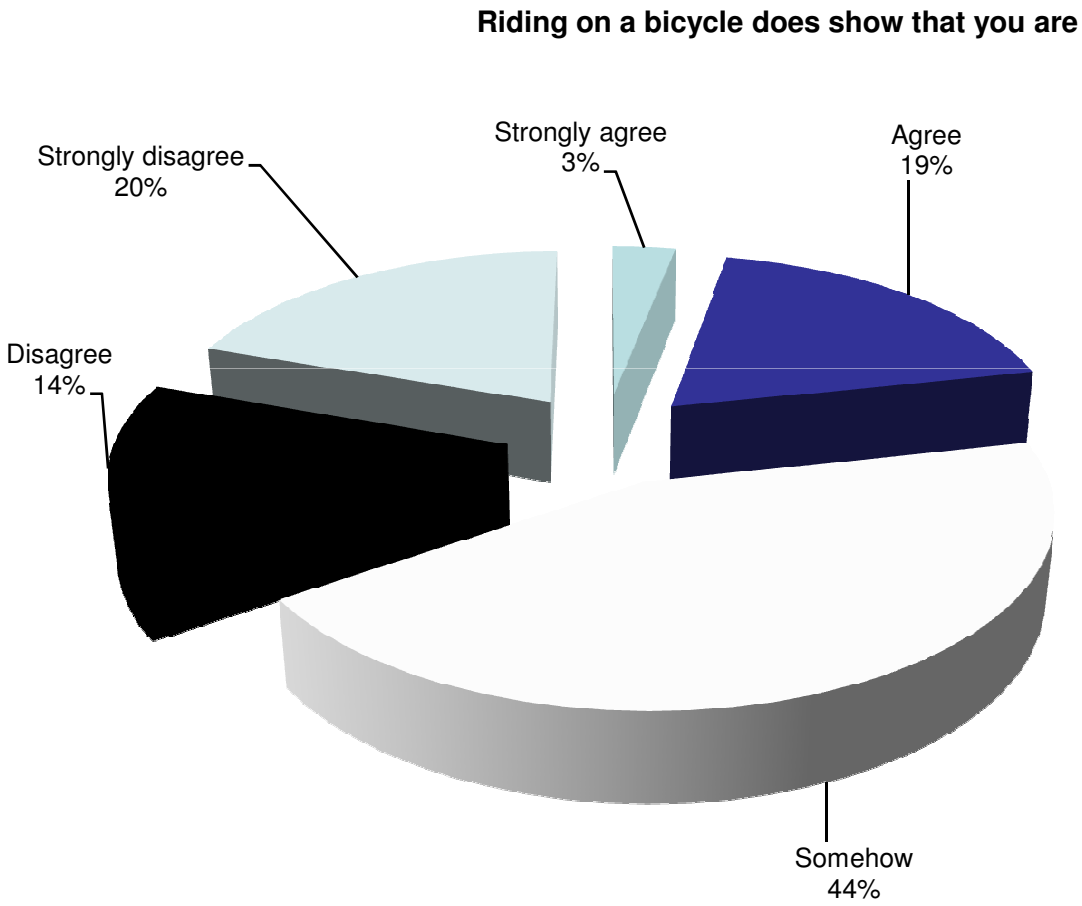
Distribution of daily trips on Jogoo Road Corridor



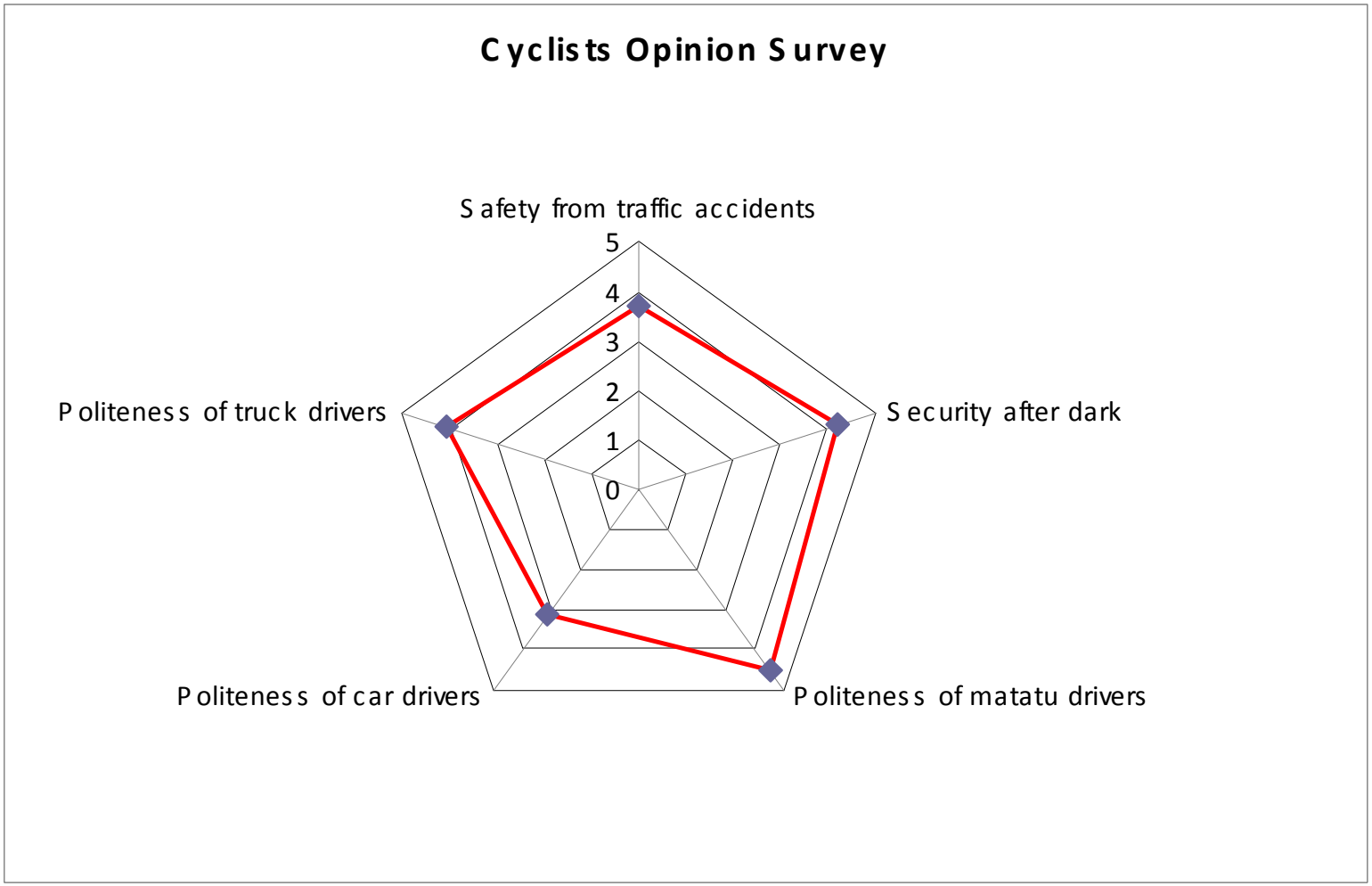
Linking travelling by Matatu to poverty



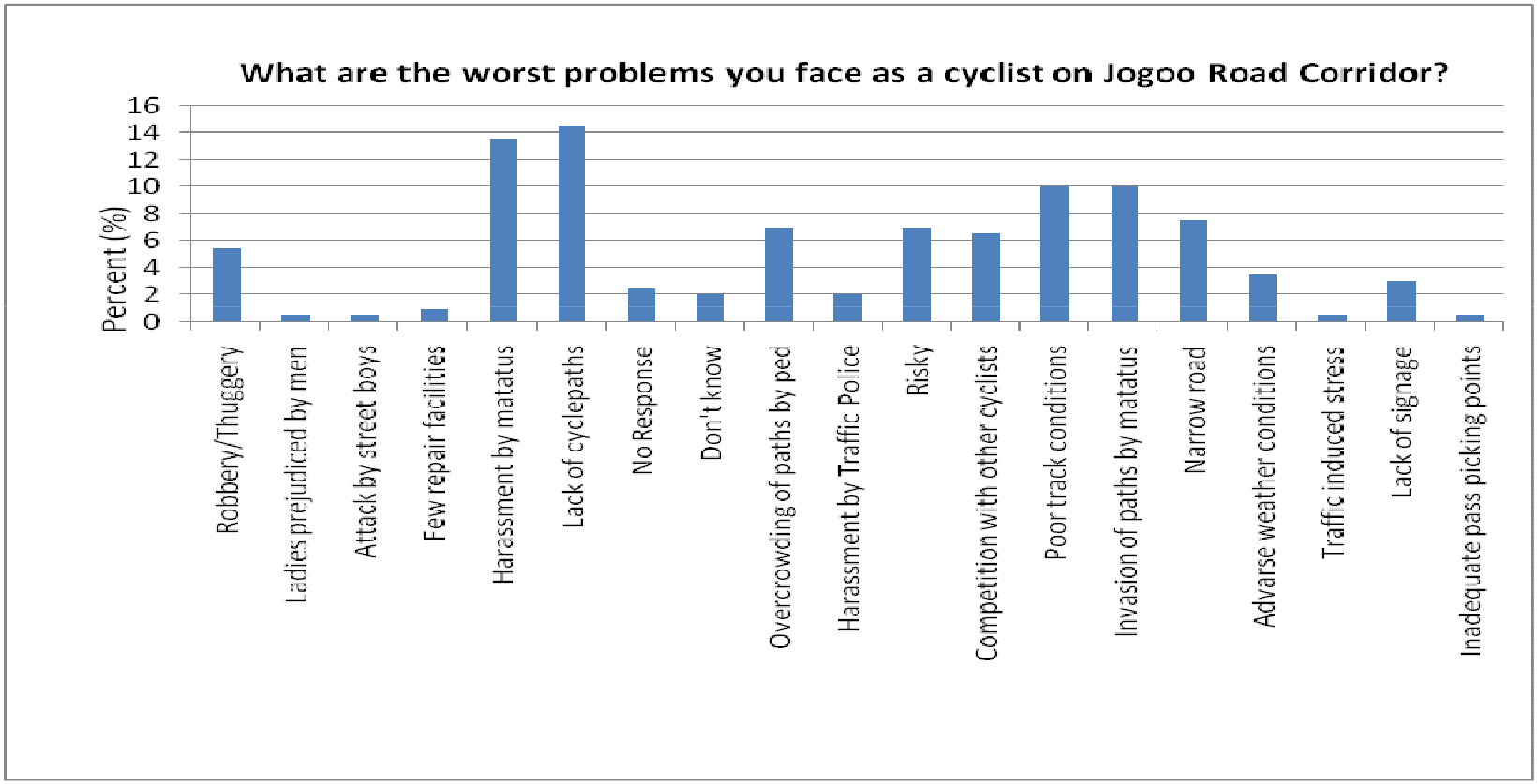
Linking travelling by bicycle to poverty



Operating conditions as perceived by cyclists on Jogoo Road Corridor



Worst problems cyclists face on Jogoo Road



Conclusion

- NMT operating conditions on Jogoo road corridor and elsewhere in the city of Nairobi are severely degraded, operating at LoS D
- NMT infrastructure are inadequate and poorly designed to cope with the NMT demand
- Traffic rules and regulations are poorly enforced or adhered to by motorized traffic
- Tested NMT study methodologies give consistent results

Recommendation

- Need for effective participation & involvement of communities and planners in infrastructure design schemes
- Need to nurture good road user behaviour from early childhood
- Need of physically self-enforcing NMT infrastructure and prioritisation measures, not dependent upon law enforcement capacity,
- Techniques applied need up-scaling for use in safety audits and infrastructure improvements